

Hansen

PROTOCOL FOR THE USE OF  $^{32}\text{P}$  and other Isotopes

- 1) All work with materials containing or contaminated with source isotope should be performed in the "hot" room. Example: all steps in the preparation of  $^{32}\text{P}$ -viral RNA, through and including the phenol extraction. Thereafter, the materials can be used in any of the laboratories with suitable precautions.
- 2) Lab benches should be freshly covered with absorbant paper prior to work with any isotopically labeled material, and the paper removed and discarded after completion of the work. Paper should not be left on benches for extended periods of time, generally not for more than one day. The only legitimate exception to this would be to monitor the work area regularly and remove the paper as soon as it becomes contaminated. In general, this is not advisable because contamination with  $^3\text{H}$  and  $^{14}\text{C}$  would not be detected.
- 3) Monitor the entire work area, pertinent equipment, and yourself when finished working with amounts of  $^{32}\text{P}$  detectable by Geiger counting. Report any spills or personal contamination to Mike or Warren, and clean up as indicated in Section 12.
- 4) Gloves should be worn for all work with  $^{32}\text{P}$ , and work with the sources of other isotopes. A specific coat or gown should be used specifically for work with  $^{32}\text{P}$  and removed at the conclusion. The gown should be left in the hot room and used for no other purpose, and should be monitored after each use. Discontinue its use if it <sup>is</sup> contaminated with detectable radioactivity.
- 5) All glassware used with source isotope (eg., labeled-medium) or other hot materials (eg., labeled virus, or high specific activity nucleic acids) should be carefully rinsed into radioactive waste bottles, not down the sink, then totally filled and immersed in the decontamination baths.
- 6) Use disposable pipets with  $^{32}\text{P}$  whenever possible. Handle contaminated glass pipets as you would any other contaminated glassware.
- 7) Wear your film badge. Do not leave it on your gown or smock when not in use. Store it in a reasonable place (eg., desk drawer) so that it measures only exposures incurred when worn by you. If this procedure were carefully followed, we would virtually never have recorded exposures. Most of our "exposures" measured by film badges have probably not been personal exposures, but rather one of several sorts of artifacts (such as cohabitation of a film badge and a slightly contaminated rubber bulb in the pocket of a gown).
- 8) Do not mouth pipet when working with isotopes (unless they are in trace amounts, and even that is a matter for personal distinctions).
- 9) The radioactive waste should be removed from the shielded cupboard every day, and the decontamination baths changed on Monday and Friday. If you notice that the cupboard is full, or the bath "hot", please tell Mike or Warren.

10) The laboratory will be monitored regularly. If appropriate use is made of the "hot room", there should no longer be detectable spills anywhere in the other laboratories except for equipment not located in the "hot room". If a spill is found in your work area, you will be asked to clean it up unless we can identify the "true" culprit. If you do not know how to safely clean a  $^{32}\text{P}$  spill, please follow the procedure in Section 12 and check with Mike or Warren when finished.

11) Portable items of equipment (eg., rubber bulbs, propipets, etc.) will be provided for use in the "hot room". They should be used no where else, and left on benches or in drawers, not in your drawers or gown or whatever.

12)  $\text{P}^{32}$  Clean Up Procedure

A) The best procedure is to cover the area with paper towels soaked with 1:10 dilution of conc. phosphoric acid in water for several hours ( ? days). Be careful of the acid.

B) Another procedure is to scrub down the area with a water slurry of decontamination powder (Beckman) and cover the area with paper towels soaked with slurry for several hours.

C) Both A and B.

D) These procedures depend, in large part, on the exchange of cold phosphorus for  $\text{P}^{32}$  so the longer the soak the better the decontamination.